

**U.S. GENERAL SERVICES ADMINISTRATION
COURTHOUSE MANAGEMENT GROUP**

MECHANICAL LIFT ANALYSIS

*(ACCESSIBILITY METHOD FOR ACCOMMODATION
OF PHYSICALLY DISABLED PEOPLE IN U.S. COURTHOUSE COURTROOMS)*

SECTION ONE

EXECUTIVE SUMMARY

The intent of this Analysis is (a) to develop a comprehensive understanding of the fundamental problems with current lift system designs and installations and (b) provide recommendations that serve as the basis for detailed performance criteria to eliminate these problems on future projects.

The main considerations that would lead to better functional performance are:

- Recognizing only two fundamental lift design concepts appropriate for the courtroom well environment;
- Standardizing the lift platform and pit dimensions;
- Developing planning guidelines, that effectively integrate the lift with other functional elements in the courtroom well;
- Formulating standard architectural details for all finish conditions, and incorporating them into the bidding documents;
- Optimizing the remote location of equipment;
- Refining the operation of the gate interlock system; and
- Formally removing the platform grab rail requirement.

FEASIBLE LIFT SYSTEMS

The two generic system designs most practical for this application were found to be: the hydraulic/scissors lift, with a remote hydraulic pump, and the cantilevered platform lift, incorporating a tower or mast element housing the operational apparatus. (Refer to the

diagrams of both systems at the end of this section.) Portable and inclined platform lifts were eliminated from consideration as practical solutions because of difficulties in maneuvering the portable unit in the courtroom and the necessary exposure of the apparatus related to an inclined platform system.

Limiting the feasible system concepts minimizes the impact on the design of the courtroom well. The only unique requirement that differentiates the two systems identified as practical for this situation is the equipment tower required for the cantilevered platform lift with the rear access panel for service, which can be concealed behind a wall.

PLATFORM AND PIT STANDARDIZATION

Without standardization of the platform size throughout the industry, it is impossible to determine specific dimensional requirements for incorporation of the system into the construction documents for bidding. This situation is the primary reason for inadequate coordination of finishes and details required for system incorporation.

Both the hydraulic/scissors and the cantilevered platform lifts will integrate better into the courtroom well environment if a pit is provided. This will allow the resting (non-operating) position of the lift to be at the lowest level, contiguous with the elevation of the adjacent courtroom well floor.

RECOMMENDED DESIGN CRITERIA

Every effort should be made to follow the suggested prototypical architectural planning layout, illustrated in *Section Three*, which includes the lift as an independent element. This concept will adapt to either of the recommended generic lift systems. It will also allow effective coordination of architectural detailing related to millwork, as well as platform finish conditions, to become part of the project construction documents for bidding.

Not all efforts to incorporate the lift platform into the normal path of travel to the witness box and judge's bench have been effective because of operational and architectural finish detail problems. These problems include the inability to maintain a raised position over an extended period of time (hydraulic / scissor lift) and excessive gaps between the platform and the fixed floor landing.

The basic architectural conditions that need to be included with the construction documents for bidding are the following:

- Courtroom well finish floor edge and return into the equipment pit;
- Lift platform surface finish and all edge conditions;

- Millwork enclosure and gates; and
- Equipment access panel finishes plus edge conditions.

The hydraulic system motor and its related electronics should always be located outside of the courtroom environment in an adjacent electrical or communications equipment closet.

It appears that problems with the gate interlocking system result from the system being continuously powered and overheating. Project specifications must include the requirement for wiring the gate interlocking system to allow power shutoff when the system is not in operation. The electromagnetic latch engagement at all access gates and the related electronics/controls of the system must be extensively tested before Substantial Completion of the project and acceptance of the system.

Specifications should require that the supplier identify and contract with a qualified service provider in the regional area of the installation in order to eliminate dependence on extremely remote sources of assistance and replacement parts.

CODES AND STANDARDS ISSUES

The consolidated most stringent requirements, detailed in *Section Two*, address the following design conditions:

- Net platform size;
- Controls locations;
- Gate dimensions;
- Enclosure height requirements;
- Running clearances;
- Platform/landing interface tolerances; and
- Platform grab rail requirements.*

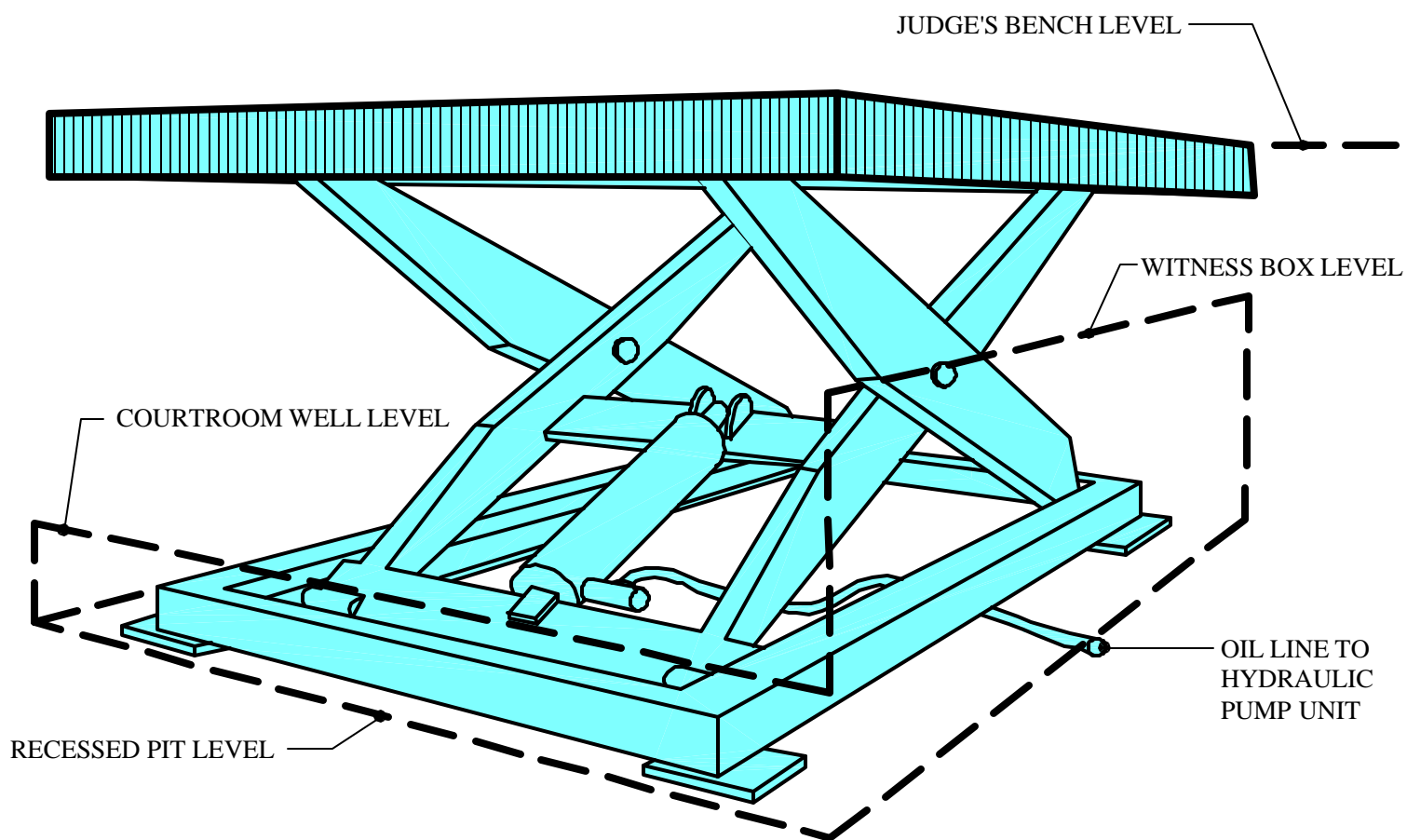
*Recommend working with agency representatives to eliminate this requirement.

CONCLUSION

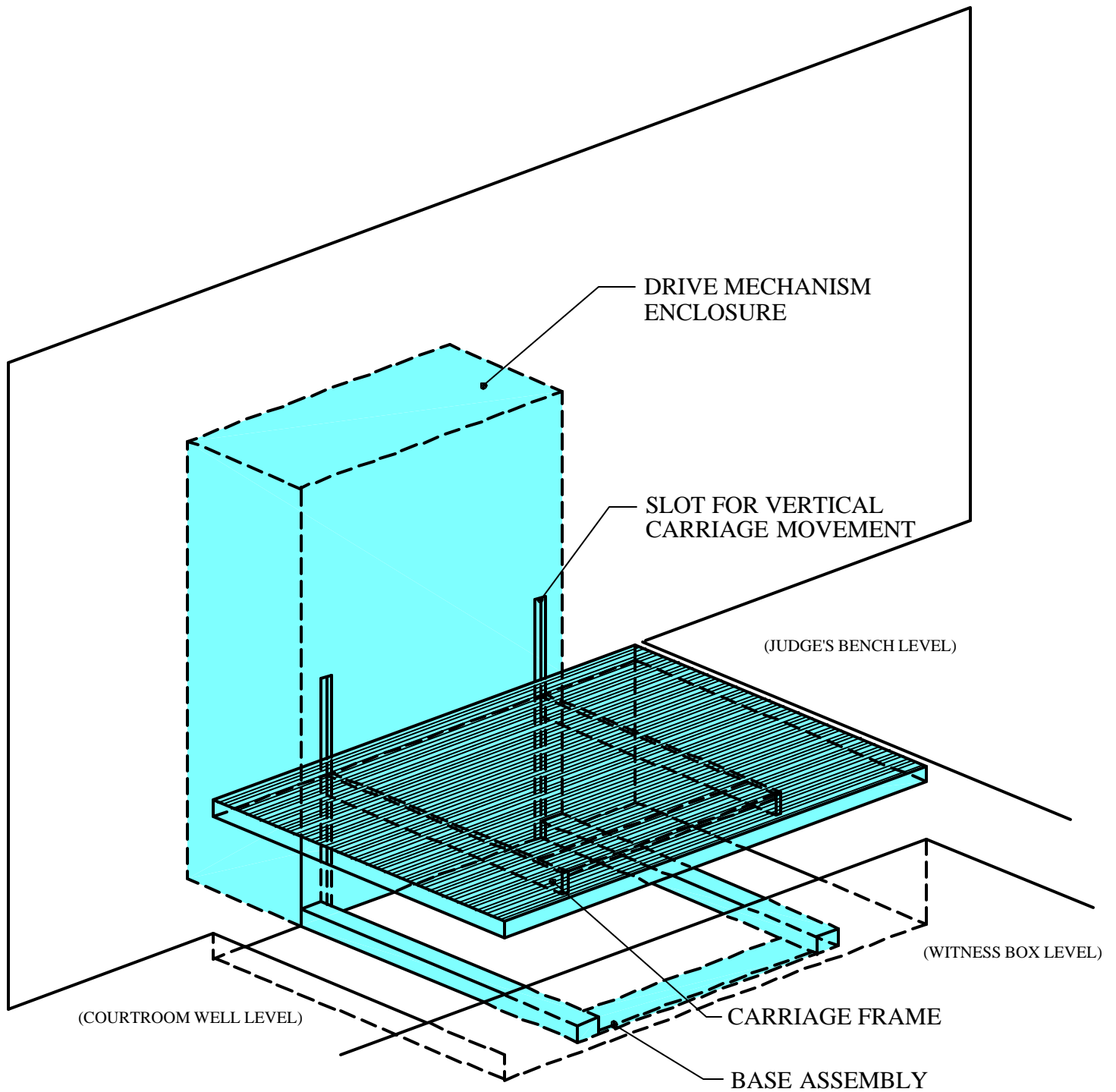
It was apparent that all the GSA staff, courts representatives, and architects of the 16 courthouses visited during the Analysis had put forth a very good effort to accommodate the mechanical lifts into the courtroom environment. Some had gone to extraordinary lengths to make the appearance of the lift as subtle as possible. In many of these instances, however, the good intentions have resulted in making the preparation for use and operation of the lift a complicated and time-consuming process.

The recommendations drawn from this Analysis, especially the development of detailed design and performance criteria, should help all those concerned to better plan for the

incorporation of the mechanical lift system into courtrooms at the appropriate time in the design process, with the least impact on the accommodation of functions in the courtroom well. The suggested performance criteria do not exclude any reputable manufacturer from bidding on lift system contracts.



HYDRAULIC / SCISSORS LIFT



CANTILEVERED PLATFORM LIFT